

## Electric Highway Tasmania, Hobart EHT Fast Charger Network Project LESSONS LEARNT REPORT 1

### Project Details

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*The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.*

### EXECUTIVE SUMMARY

*“What could possibly go wrong...”* This report lists some of the many causes of delays in implementing the ARENA grants for fast chargers in our charge network. It also notes that sometimes delays can have benefits.

### KEY LEARNINGS

#### **Lesson learnt No.1: Unexpected delays**

**Category:** Risk/logistical

**Objective:** The objective of the Project is to address blackspots by improving the availability of public BEV Fast Charging Stations which will support BEV uptake by the public and businesses, including fleets.

#### **Detail:**

Electric Highway Tasmania (EHT) have developed and currently operate thirteen sites in Tasmania with sixteen actively under development and others under consideration. Our first sites have operated since August 2020.

EHT has had some experience with the process of developing new sites including the lead times associated with negotiating site agreements, selecting and sourcing suitable equipment and contracting with electrical and civil contractors for installation and commissioning.

Our first six sites were completed close to schedule and budget, even though we had no prior experience and completion of the first sites coincided with the start of the COVID pandemic. This gave us confidence that we had the capacity to manage more – and more complex – sites.

Work on our ARENA funded sites has not progressed as predictably. Over the course of the project we have had delays resulting from:

1. COVID
2. Russia/Ukraine conflict
3. Labour shortages
4. Parts shortages
5. Small jobs unattractive to consultants
6. Staff changes in site hosts and others
7. Unexpected hurdles
8. Increasing lead times
9. Follow on delays

The following sections outline the impact of these factors on the project.

## **COVID**

Installation of our ARENA sites coincided with the peak of the COVID-19 outbreak coupled with border closures and some state lockdowns. This has resulted in delays in supply and affected the availability of people to negotiate site agreements, respond to requests for information about equipment and to undertake installations as planned.

There have been at least 20 instances that we can identify where a person with COVID has resulted in a direct delay, typically of a week or more to one or more sites, and many more where suppliers have been indirectly affected by COVID impacts on their suppliers, transport or others.

## **Russia/Ukraine conflict**

Our ARENA sites are using equipment from a European manufacturer, ordered in November 2021, with a stated delivery date of late March 2022. Shipment ex factory was scheduled for one week before Russia invaded Ukraine with loading in the week following. The ship that had been booked had a planned stop in Kaliningrad, Russia, and had to be rerouted. Loading was delayed and the disruption affected the route and timing delaying delivery. The shipment eventually arrived at our warehouse in late June.

## **Labour shortages**

Electrical contractors used by EHT have generally been specialists in solar installations prior to taking on our EV charging installations. They have familiarity with some of the more complex communications and

control requirements, are used to the characteristics of DC current and familiar with inverters and rectifiers and the rules associated with connecting such devices to the grid.

During much of 2021 and 2022 there has been a shortage of skilled labour in the building trades in Tasmania with many projects being held back by skill shortages. This shortage was increased due to a dramatic increase in demand in early 2022 with the election of a federal government more actively promoting renewable energy plus new state government initiatives stimulating both solar and EV uptake.

Contractors have been subject to increasing demand but have been unable to recruit suitably qualified electricians even from interstate. Although several have increased apprenticeship uptake, this will take years before it adds measurably to the pool of capable electricians. This is expected to be an ongoing issue for some years and demand for solar and EV related work will only increase.

### **Parts shortages**

There have been several instances where products (eg switchboards, charger stands and others) were ordered from suppliers with a history of consistent, predictable delivery times of four to six weeks where, when the order was placed, they determined that parts they require to complete fabrication which are normally readily available, are out of stock or quoted with lead times in months.

In other cases we were seeking significant modifications from standard products and suppliers cited numerous instances of delays in obtaining components.

This occurred on at least four occasions from different suppliers so it was not a case of one or two poorly performing companies.

Suppliers of parts for repair and maintenance of chargers has also been problematic. We are aware of some EV chargers – operated by others – that have been out of service for up to nine months due to inability to obtain the required parts.

Considering our experience with delays for new sites, and reports of shortages by others, we have sought to hold stock of critical spare parts for chargers, communications and other equipment that we have installed at our sites. However, an order for spare parts from one EV charger manufacturer in May 2022 still has not been delivered in full as of the end of January 2023.

### **Small jobs unattractive to consultants**

EHT tries to keep sites reasonably consistent, both to aid users and help reduce design costs and variations. However in some cases we needed specialist design for switchboard modifications or civil works.

Particularly for civil works, it was difficult to find engineering consultants to take on small, one off projects in relatively distant locations when most had a back log of work from existing clients or larger local projects. One site (not ARENA funded) took nearly three months to find a civil designer to take it on.

## Staff changes in site hosts and other partners

EHT has always sought to obtain agreement in principle from potential site hosts before applying for grant funding, either from ARENA or other sources. This involves a reasonably in depth site evaluation process including power supply to the site, existing electrical infrastructure, suitability of layout within the site, expansion potential, parking pressure, lighting, ownership, zoning and other considerations. Site hosts are well aware of our intentions and we do not proceed without a reasonably clear agreement on how the site will develop and the terms of any agreement at the time we apply for funds.

We do not sign a formal agreement at this time as we are not certain that we will receive funding. Site hosts may be reluctant to invest the additional time and expense in legal review etc for something that remains speculative until funded.

In most cases this approach has worked well. It has not been successful in a number of sites where there has been a change in personnel in the site host's organisation:

- The manager we were dealing with for a national shopping chain left between the initial discussions and the awarding of the grant. His replacement was unwilling to proceed with the installation under any terms.
- At two other sites a manager left and the incoming person took some time to deal with our request to finalise a site agreement. In one case all of the ground previously agreed had to be re-negotiated.
  - In one shopping centre case, there was a desire to achieve consistency with their agreements in other states, even though our original initiative pre-dated any discussions in other states. The agreement still has not been signed.
  - In another case, hosted by local government, when the first officer departed no one progressed the internal process of finalising the agreement. A new council was elected and had to be convinced to proceed, further delaying finalisation. It was eventually signed one year after the original draft of the agreement had been agreed, with some minor changes.

We have also experienced staff turnover in suppliers and contractors that have lead to delays, but probably not more than the normal course of business.

## Unexpected hurdles

At one site we had agreed with the site host of the preferred location prior to applying for the grant. When the grant was approved, we sought to finalise the site agreement and it was only then noted that the location we had agreed on was actually a part of the property that was leased. Locating there would require the lease to be reviewed and amended.

The lease had been established decades ago on particularly favourable terms. Any amendment would have triggered a revision with substantial adverse effects for our site host. Consequently we had to establish a new location suitable to both parties. This, combined with a change in personnel during the process resulting in a delay of about six months.

## Increasing lead times

At the time we applied for the ARENA grant, delivery times were being quoted as about twelve weeks for the chargers we were intending to purchase. By the time we ordered the chargers, the quoted delivery time had increased 15 weeks. Actual delivery time was 30 weeks, in part due to the Russia/Ukraine war.

Chargers recently ordered from the same manufacturer are now quoted as having delivery times of 36-40 weeks to our warehouse.

Quoted delivery dates expand each time you delay ordering.

Long lead times also apply to electricity network providers but they haven't blown out to the same extent as others.

## Follow on delays

As noted earlier, contractors have been busy of late. Estimating time to install based on delivery times and having all the necessary components available is just good project management. But when delays – to what seemed to be 'non-critical path' elements – throw out the schedule repeatedly, booking contractors and then deferring them can lead to resistance: "Tell me when you are *really* ready, then we will fit you in – perhaps 6-8 weeks later".

## The benefits of delays

While delays are not hoped for and going on too long can add to costs and loss of services committed, sometimes they have benefits.

## Improved technology

Some of our sites funded under a State government grant program were subject to a number of the delays cited above. In some cases the uncertainties for the sites were sufficient that we did not even order the charging equipment for grants received in December 2021 until December 2022. In the meantime, new features became available on charging equipment that had not been available a year earlier. As a result, these sites will have more flexible and long-lasting growth paths making them more sustainable investments that serve users better for the same cost.

## Better match of supply and demand

ARENA doubled the amount of grant funding for Greater Hobart, effectively doubling the capacity being developed in that grant round. Our submission for grant funding had been based on a certain level of expected demand and demand growth, and doubling the capacity installed (shared by two recipients) meant our expected revenues were unlikely to be realised while fixed costs remained the same. The early years where fixed costs such as standby power, insurance, site rental, billing provider contracts and communications costs would exceed revenue would last longer before demand finally made the sites cash flow positive.

The delay in completing these sites by both EHT and the other grant recipient means that demand growth has had a chance to catch up with this committed supply, reducing initial operating losses closer to those budgeted.

At the same time, sites have come on stream to meet some of the demand so users have still been served. Based on the distribution of EV chargers and their use statewide, it is unlikely that the delays in Greater Hobart deployment have had a material effect on EV uptake in Tasmania.

Overall the project has continued as planned. Final completion of the five sites should still occur within the overall timeframe of about two years.

### Response

EHT has reported delays at the regular reporting milestones. ARENA confirmed that many other grant recipients were experiencing similar issues. ARENA recognised that such things are not in our control and adjusted the Milestone dates to accommodate the revised schedule.

**Implications for future projects:** Even if you are experienced and believe you can program your work to a tight schedule, some events simply aren't predictable. Allow ample contingency time and ensure contract flexibility.

**Conclusion:** Don't sign contracts with inflexible deadlines or unrealistic penalties for delays.

